

SCIENTIFIC RESULTS
OF
THE SECOND YARKAND MISSION.

NEUROPTERA.

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PSEUDO-NEUROPTERA.

Family—*ODONATA*.

Sub-Fam.—*LIBELLULINA*.

LIBELLULA QUADRIMACULATA, L.

Two males of rather small size (expanse of wings 65—69 *mm.*), from Yárkand, 22nd May; indicated as “very common on the jheel (marsh).” Both pertain to the var. *præmibila*, Newman, in which the apex of the wings has a fuscous spot or band; also 1 male and 1 female of the typical form from Yangihissar, in April.

The insect is spread over all the temperate and cold regions of the Northern Hemisphere, and is occasionally of migratory habits.

Sub-Fam.—*ÆSCHNINA*.

ANAX PARTHENOPE, De Sclys.

One ♀ from Srinagar, 28th July.

A widely-distributed, but probably not very abundant, species. In Europe it extends northward to Paris, and is found also in Central Germany, Austria, Hungary, Italy, Turkey, &c.; also in Asia Minor and Western Turkestan, and in Algeria.

This female has the wings tinged with smoky in the middle, as in the form from Algeria.

SECOND YARKAND MISSION.

Sub-Fam.—AGRIONINA.

SYMPYONA FUSCA, Van der Linden.

One ♀ from Yangihissar, 18th April.

Oecurs also over the greater part of Europe (but not in the British Isles), and in Siberia, Asia Minor, Western Turkestan, Algeria and Morocco.

AGRION PULCHELLUM, Van der Linden.

5 ♂ and 4 ♀ from Yárkand, 22nd May.

Distributed over the greater part of Europe; oecurs also in Asia Minor, Mingrelia, and Western Turkestan.

There is also (in spirits) a larva of some species of *Libellulidæ*, together with larvæ and 'nymphs' of a species of *Agrionidæ*, all from Yárkand, taken in November.

Family—EPHEMERIDÆ.

EPHEMERA, sp.

There is a fragment of a male imago of a species of this genus in spirits, from the Jhelum valley, not determinable.

Family—PERLIDÆ.

Of this family there are 3 males and 1 female of a large species of *Perla*, and four or five of a small species (with two ocelli) in spirits, from the Jhelum valley—from Kohala to Baramula; a small pinned *Perla* (nearly destroyed) from Tankse, Pankong valley, to Chagra, and a *Nemoura*, in spirits, from Murree, in the Punjab.

It is useless to attempt to describe these with any chance of success. The ♀ of the large *Perla* (in very bad condition) has a deep triangular notch on the margin of the egg-valve; the head and thorax without markings.

PLANIPENNIA.

Family—MYRMELEONIDÆ.

MYRMECÆLURUS PUNCTULATUS, Steven.

One ♀ from Leh, 6th September.

Oecurs also in Hungary and South Russia. The example from Leh does not materially differ from others in my collection from Sarepta. Possibly the black markings on the head and thorax (always variable) are rather less pronounced.

Family—CHRYSOPIDÆ.

CHRYSOPA VULGARIS, Schneider.

One ♀ from Ighiz Yar, Eastern Turkestan, 18th May, appears to belong here.

It differs from ordinary examples in the dividing veinlet of the third cubital cellule in the anterior wings being interstitial; but this is a not infrequent aberration in European examples.

The species is of very wide distribution in Europe, and is also known from Asia Minor and Western Turkestan. I have seen individuals from the islands of Madeira and St. Helena that did not appear to differ.

CHRYSOPA BIPUNCTATA, Burmeister.

One example, either from Yárkand or Kugiar, appears to pertain to this Japanese species, which is probably nothing more than a local form of the common European *C. septempunctata*, Wesmaël.

CHRYSOPA, sp.

One ♂ from Karghalik near Yárkand, 29th May.

Allied to *C. vulgaris*, but distinct. It would be injudicious to describe it as new from this single example, especially as it belongs to a section of the genus in which the characters are so little obvious.

TRICHOPTERA.

Family—*LIMNOPHILIDÆ*.

STENOPHYLAX MICRAULAX, n. sp.

3 ♂, 4 ♀, Leh, in August.

Brownish-testaceous above, yellowish-testaceous beneath. Head small; eyes very prominent; ocelli very large, those of the disk encircled with fuscous, with which colour the anterior margins of the disk are bordered; hairs blackish; the posterior warts not prominent: on the face the raised lateral margins have two large, oval, prominent warts, furnished with blackish hairs, and there are four smaller warts forming the corners of a quadrangle on the median portion; labrum very long (for the genus); maxillary palpi ordinary, the basal joint very short, the two others (♂) gradually clavate; a large and prominent triangular horny lobe at the base of the maxillæ; labial palpi small, the second joint broadly triangular. Antennæ rather shorter than the wings, moderately slender, testaceous, with rather broad, brownish annulations on the upper side. Pronotum well developed, its anterior edge semi-circular with a median excision; the disk is concave, but the edges are thickened and raised and clothed with long fuscous hairs. Meso- and metanota broadly fuscous or blackish at the sides. Legs testaceous, moderately stout; spines deep black; anterior and intermediate tibiæ with a conspicuous fuscous semi-annulation in the middle and at the apex externally; tarsal joints slightly fuscous at the tips externally. Abdomen fuscous above, testaceous beneath. Anterior wings broad, the apex elongately parabolic or elliptical: pale brownish-grey with numerous very indistinct paler spots, the membrane very finely granulate, with minute fuscous hairs; the hairs on the nervation short and fine, fuscous; in the narrow area below the inferior branch of the upper cubitus, and in the post-costal basal cellules and area, are longer black hairs arranged somewhat in tufts, and at the extreme base are a few longer brown erect hairs: the costal margin (in the ♂ only) near the base is turned under for a space of about 4 mm., forming a deep narrow groove on the under side, filled with black hairs and conspicuously dark: nervation rather strong, testaceous; radius sharply bent

before its termination; discoidal cell extending to near the base of the wing, its upper edge nearly straight, the lower slightly curved; all the apical cellules broad at the base, the 2nd very broad, truncate, 4th also truncate, 3rd bi-angulate. Posterior wings pale greyish sub-hyaline, with sparse, minute blackish hairs on the membrane; neuration pale; discoidal cell rather shorter than in the anterior; 1st apical cellule much narrower than the 2nd to 4th, which are very broad; upper branch of cubitus furcating about on a level with the middle of the discoidal cell.

In the male the anal parts are arranged as follows:—The 8th dorsal segment is very large, testaceous, rather thickly clothed with long and strong testaceous hairs springing from small tubercles; viewed from above its margin appears to be straight, with several strong testaceous spines in the middle placed closely together; but viewed in front (or from beneath) the median portion is seen to be strongly turned under, forming a triangle, closely set with black tubercles. What appear to be superior appendages are band-shaped, flattened, slightly curved, truncate processes, little prominent, and inserted so far inferiorly as to cause a doubt as to their true value. (It may be that they represent the intermediate appendages, and that the superior are

Stenophylax micraulax, McLachlan, male.

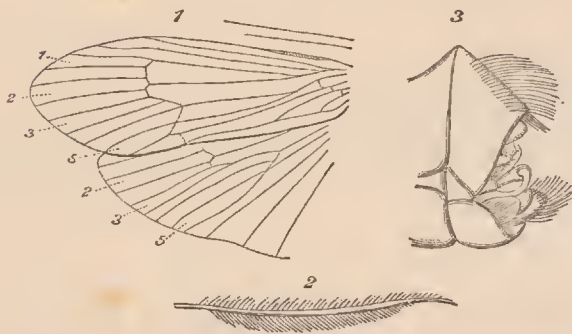


Fig. 1. Neuration of wings.
2. Groove in costa of anterior wings, more enlarged.
3. Apex of abdomen, from side.

only indicated by a tubercle projecting slightly beyond the margin above them). The 8th ventral segment is rounded on the margin, and from it proceed two short, broad, excessively hairy lobes, divided by a suture, and each excised on its margin, apparently belonging to the 9th ventral segment; internally each of these lobes is very concave, and lying in them are what appear to be the very short obtuse inferior appendages. What appear to be the penisheaths are sub-cylindrical processes, curved strongly inward in a forcipate manner and nearly touching at the tips, which are somewhat thickened, blackish, and furnished with short spines. The penis lies between them, and is strong and rather short.

In the female the apex of the abdomen is very obtuse. The 8th dorsal segment broad (concealing the 9th in the dry insect), its margin slightly rolled inwards, and fringed with yellow hairs; the 7th ventral segment forms a kind of pouch, the 8th with a concave space, 9th in the form of a short open tube.

Length of body ♂ 11—12 mm., ♀ 12—13 mm. Expanse ♂ 36 mm., ♀ 44 mm.; greatest breadth of anterior wings ♂ $6\frac{1}{2}$ mm., ♀ 7 mm.

Pending the discovery of some method for satisfactorily dividing *Stenophylax*, this insect must be placed therein. It differs from any species known to me in the curious groove near the base of the costal margin in the anterior wings of the male, and also in the anal parts, which almost defy intelligible description.

The external aspect is somewhat intermediate between the groups of which the European *S. stellatus* and *S. concentricus* are representatives.

PLATYPHYLAX, n. sp.

Two females from the same locality as the last; it is useless to describe them without more examples in better condition, and of the other sex.

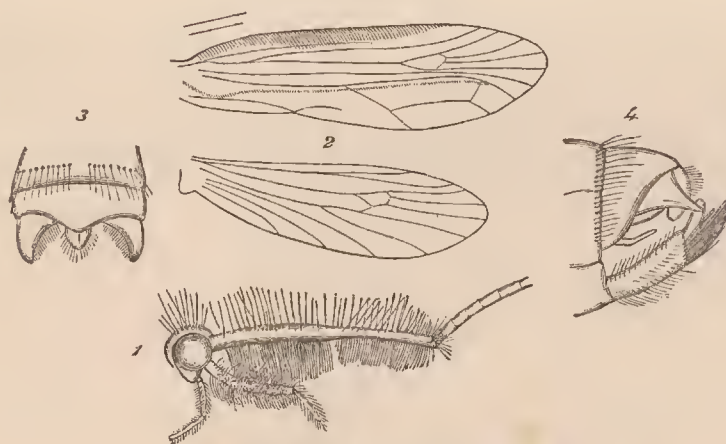
Family—*SERICOSTOMATIDÆ*.*DINARTHURUM INERME*, n. sp.

10 ♂, 4 ♀, the latter in spirits, Leh, 7th September.

Male brownish, clothed with greyish-brown pubescence. Basal joint of antennæ rather longer than the head and entire thorax united, its basal portion black, but the apical portion brown; somewhat compressed laterally, nearly straight, but with a slight bend in the basal portion to about the middle, unarmed, but the basal half beneath has a very dense fringe of thickened black hairs; this portion above, and all the apical half, are furnished with long outstanding grey hairs: thread of the antennæ longer than the wings, pale-yellow, very distinctly annulated with brown up to the tips. Maxillary palpi long and slender, with a small terminal joint; the basal portion clothed with long and dense thickened¹ and ordinary grey hairs, intermingled (but with no short 'scales'), the terminal joint with ordinary hairs only. Labial palpi small and slender, pale-yellowish. Legs pale yellow. Anterior wings greyish; the costal margin for more than half its length from the base has a very dense inturned fringe of thickened blackish-grey hairs; the membrane lightly clothed with short greyish pubescence, and with numerous small, deep, black 'scales'; but there is a broad median longitudinal space free from 'scales,' limited inferiorly by a narrow groove extending from base to apex; apical fringes greyish, very long on the apical portion of the inner margin: neuration pale; discoidal cell short; nerves very irregular below the groove, forming large cellules. Posterior wings slightly paler than the anterior, with a few scattered black 'scales' on the costal portion, but otherwise with only slight and very short greyish pubescence; fringes very long and greyish; discoidal cell very short.

Dinarthrum inerme, McLachlan, male.

Fig. 1. Head, &c., from side.
2. Neuration of wings.



3. Apex of abdomen, above.
4. Apex of abdomen, from side.

The 9th dorsal segment of the abdomen rather broad, brown, its margin produced in a triangular form, fringed with yellowish hairs; from each side of it proceeds a large yellow triangular plate with the apex considerably produced and sub-acute, apparently connected with two yellowish median parts, little prominent, and separated one from the other. In-

¹ Under the microscope, with a high power, each of these thickened hairs has a peculiar rugose appearance.

ferior appendages long and stout, slightly curved, directed upward, yellow with concolorous hairs; at the apex is a dense brush of spiniform yellow hairs, perhaps concealing a smaller apical joint; from without this brush projects a flattened obtuse process, perhaps connected with the appendage, or perhaps distinct from it, and for its greater length lying in its concave inner side. Penis placed far internally, slender, slightly geniculate, yellow.

In the ♀ the neuration and palpi are regular, and in details almost precisely as in *D. pugnax* (vide my Revision and Synopsis of the *Trichoptera* of the European Fauna).

Length of body $5\frac{1}{4}$ —6 mm. Length of basal joint of antennæ 3 mm. Expanse 18—21 mm.

The genus *Dinarthrum* was established by me in the *Journal of the Linnean Society, Zoology*, vol. xi, p. 116 (1871), for an insect from North India described as *D. ferox*, in which the extraordinary basal joint of the antennæ of the ♂ has a very strong basal tooth. Later on, in 1875, I described another species in the *Neuroptera* of Fedtschenko's Travels in Turkestan, page 30 (and more recently in Part V of my Monographic Revision and Synopsis of the *Trichoptera* of the European Fauna, page 279, pl. xxx, 1877), as *D. pugnax*, in which the said joint has two such teeth. In *D. inerme* there is no tooth. All the species bear considerable external resemblance one to the other, and are only separable by structural characters. The form is very curious, and as is usual in this section of *Sericostomatidæ*, the sexes differ greatly in appearance and structure: the nearest ally amongst true European insects is the genus *Lasiocephala*.

SUMMARY.

Only about 15 species of *Neuroptera* (in the broad sense) have been seen by me, viz., four species of *Odonata* (dragon-flies), one of *Ephemeridæ*, three of *Perlidæ*, one of *Myrmeleonidæ*, three of *Chrysopidæ*, and three of *Trichoptera*.

The general aspect is European. All the *Odonata* are European, and two of them occur in Britain. The ant-lion (*Myrmecælurus*) is a species of Eastern Europe. The *Chrysopidæ* have nothing peculiar about them. The genus *Dinarthrum* in the *Trichoptera* was originally founded on an Indian species, but I have since seen another species from Turkestan, so that the genus should probably be regarded as more Central Asian than Indian.